

3.1. The diversity of cells

I. All living things are made up of cells
 A. Cell - the smallest unit of life

II Cells and Cell Theory

A. Robert Hooke was the first person to describe cells

1. observed a thin slice of cork

B. Finding Cells in other Organisms

1. Anton von Leeuwenhoek, a double Merchant made the first "real" observation of single celled organisms in H₂O called protists

C. Cell Theory

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1. It took 200 years after Hooke to conclude that cells were living

2. Matthias Schleiden studied plants and concluded them to be cells in 1838

3. Theodor Schwann concluded in 1839 that animal tissues were made of cells

a. Schwann then wrote the first two parts of the cell theory

→ all organisms are made of cells

→ the cell is the basic unit of life

4. Rudolf Virchow added in 1858 that cells could only come from existing cells

II Cell size is limited by surface area to volume ratio

III Parts of the cell

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- A. Cell membrane - protective layer that covers the cell, acts as a barrier
 - 1. Cytoplasm - internal fluid of a cell
 - B. Organelles - structures that perform specific functions in the cell
 - C. Genetic Material
 - 1. In some (most) cells, the DNA is enclosed inside an organelle called a nucleus
 - 2. Mature blood cells lose their DNA upon maturity (start w/ DNA)
- IV Two kinds of cells**
- * A. All cells have membranes, organelles, cytoplasm + DNA
 - B. Two types of cells: cells with a nucleus + cells without a nucleus
 - * 1. Cells with ~~no~~ nucleus are prokaryotes
 - 2. Cells with a nucleus are eukaryotes
- V Prokaryotes: Bacteria + Archaea**
- A. Most common prokaryote - bacteria
 - 1. Smallest cells known are bacteria
 - B. Archaea - prokaryote with ~~similar~~ different features than bacteria
 - 1. Types of archaea:
 - heat-loving, salt-loving, methane-making
- VI Eukaryotes + Eukaryotic Cells**
- A. Largest cells, 10x larger than bacteria
 - B. Eukaryotic cells have a nucleus
 - 1. have membrane-bound organelles
 - C. Organisms made of eukaryotic cells are called eukaryotes
 - * 1. Multicellular means "many cells"
 - 2. Protists are unicellular or single-celled eukaryotes (amoebas), and are multicellular (green algae)
 - a. yeast is a single-celled organism

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